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PATENT
Attorney Docket No.: A-67616-1/RMS/DCF/KJC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

STUELPNAGEL et al.

Serial No. 09/500,555

Filed: February 9, 2000

For: AUTOMATED INFORMATION PROCESSING IN RANDOMLY ORDERED ARRAYS

Examiner: B.J. Forman

Group Art Unit: 1655

CERTIFICATE OF MAILING

I hereby certify that this correspondence, including listed enclosures, is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231 on 7-5-02.

Signed: Kathleen M. Carroll
Kathleen M. Carroll

RESPONSE TO OFFICE ACTION

Assistant Commissioner for Patents
Washington, DC 20231

Dear Sir:

This is in response to office action mailed February 5, 2002, for the above identified U.S. Patent Application. This response is submitted on or before July 5, 2002, accompanied by a petition for a two month extension of time and the required fee, making this a timely response. However the Commissioner is authorized to charge any additional fees which may be required, including extension fees or other relief which may be required, or credit any overpayment to Deposit Account No. 06-1300(Our order No. A-67616-1/RMS/DCF).

Please amend the application as follows and consider the remarks herein.

IN THE SPECIFICATION

Please insert a first paragraph under the title of the invention to read as follows:

B1 --This application claims priority to provisional application 60/119,323 filed February 9, 1999--

IN THE CLAIMS

1. (twice amended) An array composition comprising:

a) a substrate with a surface comprising discrete sites;

b) a population of microspheres comprising at least a first and a second subpopulation, wherein each subpopulation comprises a bioactive agent, wherein said microspheres are distributed on said surface, and wherein at least one of said subpopulations does not have an optical signature; and

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c) at least one fiducial.

2. An array composition according to claim 1 wherein at least one of said subpopulations comprises a unique optical signature.

3. (amended) An array composition according to claim 1 wherein each subpopulation comprises an identifier binding ligand that will bind a decoder binding ligand for identification and elucidation of said bioactive agent.

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4. An array composition according to claim 1 wherein said substrate is a fiber optic bundle and said fiducial is a fiducial fiber.

5. (amended) An array composition according to claim 1 wherein said substrate is a fiber optic bundle, said array comprises at least three non-linear fiducials, and each of said fiducials is a fiducial fiber.

6. An array composition according to claim 5 wherein at least one of said fiducial fibers has a different shape from the others.

7. An array composition according to claim 1 wherein said fiducial is a defined edge of said substrate.

8. An array composition according to claim 1 wherein said fiducial is a fiducial bead.

9. An array composition according to claim 1 wherein said bioactive agents are nucleic acids.

10. An array composition according to claim 1 wherein said bioactive agents are proteins.

11. An array composition according to claim 1 further comprising a computer readable memory comprising:

a) computer code that receives a first data image; and

b) computer code that registers said first data image using said fiducial to generate a first registered data image.

12. An array composition according to claim 11 wherein said computer readable memory further comprises:

a) computer code that receives a second data image;

b) computer code that registers said second data image using said fiducial to generate a second registered data image; and

c) computer code that compares said first and said second data image.

18.(amended) A method of making an array composition comprising:

a) forming a surface comprising individual sites on a substrate;

b) distributing microspheres on said surface such that said individual sites contain microspheres, wherein said microspheres comprise at least a first and a second subpopulations each comprising a bioactive agent; and wherein at least one of said subpopulations does not have an optical signature; and

c) incorporating at least one fiducial onto said surface.

19. A method according to claim 18 wherein said subpopulations further comprise an identifier binding ligand that will bind a decoder binding ligand for identification and elucidation of the bioactive agent.

20. A method according to claim 18 wherein at least one of said subpopulations further comprise an optical signature for identification and elucidation of the bioactive agent.

21. A method according to claim 18 wherein said substrate is a fiber optic bundle and said fiducial is a fiducial fiber.

22. A method according to claim 18 wherein said substrate is a fiber optic bundle, said array comprises at least three non-linear fiducials, and each of said fiducials is a fiducial fiber.

23. A method according to claim 22 wherein at least one of said fiducial fibers has a different shape from the others.

24. A method according to claim 18 wherein said fiducial is a defined edge of said substrate.

25. A method according to claim 18 wherein said fiducial is a fiducial bead.

26. A method according to claim 18 wherein said bioactive agents are nucleic acids.

27. A method according to claim 18 wherein said bioactive agents are proteins.

44. A composition according to claim 1, wherein said discrete sites are wells.

45. A composition according to claim 1, wherein said microspheres are randomly distributed on said substrate.

46. A method according to claim 18, wherein said discrete sites are wells.

47. A method according to claim 18, wherein said microspheres are randomly distributed on said substrate.

48.(new) A method according to claim 1 or 18, wherein said identifier binding ligand is a protein.

49.(new) A method according to claim 1 or 18, wherein identifier binding ligand is a nucleic acid.

PRIORITY

The specification is amended as provided above. Contrary to the Examiner's assertion that the provisional application does not provide adequate support under 35 U.S.C. 112 for the pending claims of the instant application, support can be found throughout the specification. See, for example, specification at page 4, lines 19-21; and page 5, lines 3-6. Thus, there is adequate support for an array comprising at least one fiducial and the effective filing date should be February 9, 1999, not February 9, 2000.

REMARKS

Claims 1-12, 18-27 and 44-49 are pending. A "clean" claim set to be introduced in place of the original claims is provided above. Claims 3 and 5 have been amended for clarity. Claims 1 and 18 have been amended. Support for the amended claims 1 and 18 is found in the specification at page 6, lines 1-16; page 18,lines 14-16; page 19, lines 21-30. Amendments to the claims are indicated in the section entitled "Version Showing Changes Made", which follow these remarks. An appendix of the pending claims is also provided for the Examiner's convenience. The applicants thank the Examiner for the consideration of the IDS.

Rejections based on 35 U.S.C § 102 (e)

Claims 1-6, 8-10, 18-23, 25-27 and 44-47 are rejected under 35 U.S.C. § 102(e) as being anticipated by Walt et al. (U.S. Patent No. 6, 327,410 B1, filed 11 September 1998).

Walt et al. is directed to a microsphere-based analytic chemistry system. Walt et al. teaches the use of microspheres distributed on the surface of a substrate wherein each microsphere contains an optical signature. Regarding amended claims 1 and 18, Walt et al. is silent with respect to teaching at least one subpopulation of microspheres not having an optical signature.

In regards to claims 1 and 18 (from which all other claims depend), the Examiner states that Walt et al. teaches all the elements of claims 1 or 18. The amended claims as provided herein teaches at least one of said subpopulations does not have an optical signature.

The law is well established that in order to anticipate a claim, the prior art must disclose "each and every element"of the claimed invention. SSIH Equipment S.A.v. U.S. Inc. Int'l. Trade Commission, 218 USPQ 678, 688 (Fed. Cir. 1983). As stated by the Federal Circuit in In re Bond, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990), "[f]or a prior art reference to anticipate in terms of 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference." (Emphasis added). See also Glaverbel Societe Anonyme v. Northlake Marketing & Supply, Inc., 33 USPQ2d 1496 (Fed. Cir. 1995).

Walt et al. does not disclose "each and every element" of the claimed invention. Accordingly, the reference does not anticipate the present claims, and the rejection is improper.

Applicants respectfully request the withdrawal of the rejection.

Rejection based on 35 U.S.C § 103

Claims 7 and 24 are rejected under 35 U.S.C § 103 (a) as being unpatentable over Walt et al. (U.S. Patent No. 6,327,410, filed 11 September 1998) in view of Augenlicht (U.S. Patent No. 4,981,783).

The distinctions between Walt et al. and claims 1 and 18 (from which claims 7 and 24 depend) of the present invention are described above and are incorporated herein by reference.

Augenlicht et al. is directed to detecting the expression of cloned genes by immobilizing nucleic acid from individual clones arranged in a pattern on a substrate such as nitrocellulose and hybridizing nucleic acid probes to the immobilized nucleic acid with subsequent determination of the level of expression of individual genes in a sample. Augenlicht et al. teaches the use of

fiducial markings to locate the position of the individual clones. Augenlicht et al. does not teach the use of fiducials in an array comprising microspheres distributed on a substrate.

To establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In addition, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the claim limitations must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Examiner states that it would have been obvious to one of ordinary skill in the art to apply the fiducial placement taught by Augenlicht et al. to the array composition of Walt et al. for the expected benefit of facilitating detection and identification of the bioactive agent as taught by Augenlicht. Applicants respectfully disagree.

There is lacking any suggestion or motivation to modify the references or combine reference teachings. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F 2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). There is no suggestion in either reference of modifying or combining to reach the claims of the present invention.

The Examiner's attention in respectfully drawn to In re Lee, 61 USPQ2d 1430 (CA FC 2002). In this case, the Examiner rejected the claims under 35 U.S.C. §103 and stated that the required motivation "would be that the automatic demonstration mode is user friendly and it

functions as a tutorial". Id at 1435. The Federal Circuit stated that "deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is "basic knowledge" or "common sense"". The Board's finding must extend to all material facts and must be documented on the record, lest the "haze of so-called expertise" acquire insulation from accountability. "Common knowledge" and "common sense", even if assumed to derived from the agency's expertise, do not substitute for authority when the law requires authority." (citing In re Zurko, 59 USPQ2d 1693 (CA FC 2001); see Lee, 1434-1435).

In this case, the Examiner has essentially used impermissible hindsight and "common sense" to conclude that the combination of these two references leads to "the facilitation of detection and identification of the bioactive agent". This is legally incorrect under the Federal Circuit's analysis.

In addition, the cited references do not teach all of the claim limitations. The present invention not only teaches the use of fiducial markings in conjunction with microspheres distributed on a surface, but also teaches at least one subpopulation of microspheres distributed on a surface does not have an optical signature. Neither of Walt et al. or Augenlicht et al. teach or suggest this aspect of the present invention.

Since neither Walt et al. or Augenlicht et al. teach or suggest the use of at least one subpopulation of microspheres without optical signatures, which is an element of both claims 7 and 24, the requirement that the prior art reference (or references when combined) must teach or suggest all the claim limitations has not been met. Therefore a prima facie case of obvious has not been satisfied.

Claims 11-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Walt et al. (U.S. Patent No. 6,327,410, filed 11 September 1998) in view of Chee et al. (U.S. Patent No. 5,795,716, issued 18 August 1998).

The distinctions between Walt et al. and the present claims are discussed above and are incorporated at this point by reference.

Chee et al. is directed to a computer system for analyzing fluorescence intensities of hybridized nucleic acid probes as a method of determining unknown bases in nucleic acid sequences. Chee et al. does not teach or suggest the use of microspheres on the surface of a substrate. Furthermore, Chee et al. does not teach the use of fiducials in an array comprising microspheres on a surface of a substrate or that one of said subpopulations of microspheres does not have an optical signature.

As mentioned above in order to establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In addition, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The Examiner states that it would have been obvious to modify the composition of Walt et al. with the computer readable memory of Chee et al. and to use the fiducial to position-specifically receive and register a first data image via the computer code for the expected benefit of computer aided improved analysis of bioagents as taught by Chee et al. Applicants respectfully disagree.

As stated above, citing to In re Lee, "deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is "basic knowledge" or "common sense".

In this case, the Examiner has essentially tried to remedy the deficiencies of the cited references by impermissably using "common sense" to conclude the combination of these two references leads to computer aided improved analysis of bioagents. This is legally incorrect under the Federal Circuit's analysis.

There is no suggestion from either Walt et al. or Chee et al.to reach claims which utilize fiducials in an array comprising microspheres on the surface of a substrate wherein at least one of said subpopulations of microspheres does not have an optical signature. Therefore , the requirement that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings has not been met.

In addition, the cited references do not teach all of the claim limitations. Neither Walt et al. or Chee et al. teach or suggest the use of at least one subpopulation of microspheres not having an optical signature, which is an element of both claims 11 and 12 (both claims depend from claim 1), the requirement that the prior art reference (or references when combined) must teach or suggest all the claim limitations has not been met for a *prima facie* case of obviousness.

Accordingly, Applicants respectfully request the withdrawal of the rejection.

Applicants submit that the claims are now in condition for allowance and early notification to that effect is respectfully requested. If the Examiner feels there are further unresolved issues, the Examiner is respectfully requested to phone the undersigned at (415) 781-1989.

Respectfully submitted,

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Dated: DCF 7/5/02

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